



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,463	09/08/2000	Kiyohide Satoh	2355.12108	3618

5514 7590 05/17/2005

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

WANG, JIN CHENG

ART UNIT	PAPER NUMBER
----------	--------------

2672

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/658,463

Applicant(s)

SATO ET AL.

Examiner

Jin-Cheng Wang

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-10,12-19,24-29,31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6-10,12-19,24-29,31 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/13/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's submission (request for reconsideration) filed 04/25/2005 has been entered.

Claims 1, 3-4, 6-10, 12-19, 24-29 and 31-32 are pending in the application.

Response to Arguments

Applicant's arguments with respect to claims 1, 3-4, 6-10, 12-19, 24-29 and 31-32 have been considered but are found not persuasive in view of the ground(s) of rejection set forth in the last Office Action based on Daily U.S. Patent No. 6,317,127 (Daily).

As set forth in the subsequent rejection, Daily teaches the claim limitations of the amended claim 1 and similar claims. Applicant argues on Page 3 of Request for Reconsideration that Daily fails to disclose or suggest more than one video sensing means for sensing a video of a real space from different viewpoints. However, it is known that Daily discloses a multi-sensor system 152 to capture a wide FOV video signals in combination with each user's head tracker 44 (a sensing means) for sensing a video of a real space from different viewpoints because multiple users can sense a video of a real space from different viewpoints using the combination of the sensing means of the multi-sensor system 152 and the individual user's sensing means.

Therefore, Daily teaches or suggests the claim limitation of more than one video sensing means for sensing a video of a real space from different viewpoints (user's viewpoints). Daily's system supports multiple views simultaneously as Daily points out that the prior art has a drawback of a system limited to a single user and does not support multiple views simultaneously. Moreover, Daily discloses a local processor 48 responds to the current user FOV 46 by extracting that

Art Unit: 2672

portion of the video signal 22 that lies in the user FOV and its registered symbols 26, maps it into the user's coordinate system and transmits the subimage 42 to the HMD 40 and the local processor 48 includes a subimage capture unit 50 that downloads the data from the video and overlay distribution busses 24 and 36 and stores it in a buffer. Daily further discloses that the subimage capture unit preferably downloads an oversized subimage such that the tables used to extract the data off the buses do not have to be updated for small changes in the user's FOV and a viewpoint display unit 52 reads out the video and overlay data from the buffer for the current user FOV and transmits the subimage to the HMD.

Daily teaches an augmented reality presentation apparatus for superimposing a virtual object in a real space, characterized by comprising: objective viewpoint augmented reality presentation means for superimposing the virtual object viewed from a first viewpoint position, which differs from any player's viewpoint position, in the real space viewed from the first viewpoint position (e.g., figure 1, 9-10; column 3-5; column 10-12), wherein said objective viewpoint augmented reality presentation means includes first video sensing means for sensing a video of the real space viewed from the first viewpoint position wherein *CCD cameras or a multi-sensor system 152 attached to the underside of the airplane to image the hemisphere below the plane, the GPS 154 providing the plane's current position in coordinates and a second sensor array placed on top of the airplane for viewing star constellations (figure 1, 9-10; column 3-5; column 10-12);* first video generation means for generating a video of the virtual object viewed from the first viewpoint position wherein a source processor 16 includes individual channel processors 18 that group the pixels into packets and a multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts

Art Unit: 2672

with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer (figure 1, 9-10; column 3-5; column 10-12); first video composition means for composing an augmented reality video viewed from the first viewpoint position on the basis of the videos of the real space and the virtual object viewed from the first viewpoint position wherein a source processor 16 includes individual channel processors 18 that group the pixels into packets and a multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer (figure 1, 9-10; column 3-5; column 10-12); and objective viewpoint video display means for displaying the augmented reality video obtained from said first video composition means, the objective viewpoint video display unit being separate from any display unit adapted to display to any player an augmented reality video viewed from a player's viewpoint position wherein the multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer; A viewpoint display unit 52 reads out the video and overlay data from the buffer for the current user FOV and transmits the subimage to the HMD wherein the display 52 is separate and different from the display within HMD; see figure 1, 9-10; column 3-5; column

Art Unit: 2672

10-12. Daily further teaches player's viewpoint augmented reality presentation means for superimposing the virtual object viewed from the player's viewpoint position in the real space viewed from the player's viewpoint position (e.g., *figure 1, 9-10; column 3-5; column 10-12*); wherein said player's viewpoint augmented reality presentation means includes second video sensing means for sensing a video of the real space viewed from the player's viewpoint position including *an external stereo camera setup slaved to the user's head movement so that the cameras track his head movement and provide the desired view of the surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass to follow the user's head movement and output coordinates that define the users FOV, or the viewpoint position including a head tracker 44 for tracking the user's head movement in spherical coordinate to select a user FOV 45 from the wide FOV video signal (See figure 1, 9-10; column 3-5; column 10-12)*; player's viewpoint position acquiring means for acquiring information indicating the player's viewpoint position wherein *an external stereo camera setup slaved to the user's head movement so that the cameras track his head movement and provide the desired view of the surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass to follow the user's head movement and output coordinates that define the users FOV, or the viewpoint position including a head tracker 44 for tracking the user's head movement in spherical coordinate to select a user FOV 45 from the wide FOV video signal (see figure 1, 9-10; column 3-5; column 10-12)*; second video generation means for generating a video of the virtual object viewed from the player's viewpoint position using the information indicating the player's view position wherein *the distribution processor 24 uses the position and heading information including the appropriate geographical range, class and hierarchical levels of symbols and*

Art Unit: 2672

audio tracks for each user to obtain a subimage 42 of the wide FOV video signal 22 and a local processor 48 responds to the current user FOV 46 by extracting that portion of the video signal 22 that lies in the user FOV and its registered symbols 26, maps it into the user's coordinate system and transmits the subimage 42 to the HMD 40. The local processor 48 includes a subimage capture unit 50 that downloads the data from the video and overlay distribution busses 24 and 36 and stores it in a buffer. The subimage capture unit preferably downloads an oversized subimage such that the tables used to extract the data off the buses do not have to be updated for small changes in the user's FOV and a viewpoint display unit 52 reads out the video and overlay data from the buffer for the current user FOV and transmits the subimage to the HMD (see (figure 1, 9-10; column 3-5; column 10-12); second video composition means for composing an augmented reality video viewed from the player's viewpoint position on the basis of the videos of the real space and the virtual object viewed from the player's viewpoint position wherein the distribution processor 24 uses the position and heading information including the appropriate geographical range, class and hierarchical levels of symbols and audio tracks for each user to obtain a subimage 42 of the wide FOV video signal 22 and a local processor 48 responds to the current user FOV 46 by extracting that portion of the video signal 22 that lies in the user FOV and its registered symbols 26, maps it into the user's coordinate system and transmits the subimage 42 to the HMD 40. The local processor 48 includes a subimage capture unit 50 that downloads the data from the video and overlay distribution busses 24 and 36 and stores it in a buffer. The subimage capture unit preferably downloads an oversized subimage such that the tables used to extract the data off the buses do not have to be updated for small changes in the user's FOV and a viewpoint display unit 52 reads out the video and overlay data

from the buffer for the current user FOV and transmits the subimage to the HMD (see figure 1, 9-10; column 3-5; column 10-12); and display means for displaying to the player the augmented reality video viewed from the player's viewpoint position (e.g., HMD; figure 1, 9-10; column 3-5; column 10-12).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3-4, 6-10, 12-18, 28-29, and 31-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Daily U.S. Patent No. 6,317,127 (Daily).

2. Claim 1:

Daily teaches an augmented reality presentation apparatus for superimposing a virtual object in a real space, characterized by comprising:

Objective viewpoint augmented reality presentation means for superimposing the virtual object viewed from a first viewpoint position, which differs from any player's viewpoint position, in the real space viewed from the first viewpoint position (e.g., figure 1, 9-10; column 3-5; column 10-12), wherein said objective viewpoint augmented reality presentation means includes

Art Unit: 2672

First video sensing means for sensing a video of the real space viewed from the first viewpoint position (e.g., *CCD cameras or a multi-sensor system 152 attached to the underside of the airplane to image the hemisphere below the plane, the GPS 154 providing the plane's current position in coordinates and a second sensor array placed on top of the airplane for viewing star constellations; figure 1, 9-10; column 3-5; column 10-12*);

First video generation means for generating a video of the virtual object viewed from the first viewpoint position (e.g., *A source processor 16 includes individual channel processors 18 that group the pixels into packets and a multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer; figure 1, 9-10; column 3-5; column 10-12*);

First video composition means for composing an augmented reality video viewed from the first viewpoint position on the basis of the videos of the real space and the virtual object viewed from the first viewpoint position (e.g., *A source processor 16 includes individual channel processors 18 that group the pixels into packets and a multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer; figure 1, 9-10; column 3-5; column 10-12*), and

Art Unit: 2672

Objective viewpoint video display means for displaying the augmented reality video obtained from said first video composition means, the objective viewpoint video display unit being separate from any display unit adapted to display to any player an augmented reality video viewed from a player's viewpoint position (e.g., *the multiplexer 20 that multiplexes the packets into a wide FOV video signal 22 and the overlay distribution processor 24 interacts with the positioning system 32, the database 30 to determine which overlay symbols and audio tracks lie within the current wide FOV and the subimage capture unit 50 downloads the data from the viewo and overlay distribution buses 24 and 26 and stores it in a buffer; A viewpoint display unit 52 reads out the video and overlay data from the buffer for the current user FOV and transmits the subimage to the HMD wherein the display 52 is separate and different from the display within HMD; see figure 1, 9-10; column 3-5; column 10-12);*

wherein said apparatus further comprises:

Player's viewpoint augmented reality presentation means for superimposing the virtual object viewed from the player's viewpoint position in the real space viewed from the player's viewpoint position (e.g., *figure 1, 9-10; column 3-5; column 10-12*);

wherein said player's viewpoint augmented reality presentation means includes

Second video sensing means for sensing a video of the real space viewed from the player's viewpoint position (e.g., *an external stereo camera setup slaved to the user's head movement so that the cameras track his head movement and provide the desired view of the surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass to follow the user's head movement and output coordinates that define the users FOV, or the viewpoint position; figure 1, 9-10; column 3-5; column 10-12*);

Art Unit: 2672

Player's viewpoint position acquiring means for acquiring information indicating the player's viewpoint position (*e.g., an external stereo camera setup slaved to the user's head movement so that the cameras track his head movement and provide the desired view of the surroundings; column 1; and the tracking device 164 such as an RF beacon or a gyro compass to follow the user's head movement and output coordinates that define the users FOV, or the viewpoint position; figure 1, 9-10; column 3-5; column 10-12*);

Second video generation means for generating a video of the virtual object viewed from the player's viewpoint position using the information indicating the player's view position (*e.g., the distribution processor 24 uses the position and heading information including the appropriate geographical range, class and hierarchical levels of symbols and audio tracks for each user to obtain a subimage 42 of the wide FOV video signal 22; figure 1, 9-10; column 3-5; column 10-12*);

Second video composition means for composing an augmented reality video viewed from the player's viewpoint position on the basis of the videos of the real space and the virtual object viewed from the player's viewpoint position (*e.g., the distribution processor 24 uses the position and heading information including the appropriate geographical range, class and hierarchical levels of symbols and audio tracks for each user to obtain a subimage 42 of the wide FOV video signal 22; figure 1, 9-10; column 3-5; column 10-12*); and

Display means for displaying to the player the augmented reality video viewed from the player's viewpoint position (*e.g., HMD; figure 1, 9-10; column 3-5; column 10-12*).

Claim 3:

Art Unit: 2672

The apparatus according to claim 1, characterized in that said player's viewpoint augmented reality presentation means further comprises: the second video generation means for generating a video of the virtual object viewed from said player's viewpoint position; and the display means for displaying to the player the video of the virtual object viewed from said player's viewpoint position on a display surface through which the player can visually see the real space.

Claim 3 recites all the limitations of claim 1 and adds the limitation of "the second video generation means" and "the display means." Daily teaches a video generation means and display means (e.g., figure 1, 9-10; column 3-5; column 10-12).

Claim 4:

The apparatus according to claim 1, characterized by further comprising information generation means for generating information that pertains to rendering of the virtual object, and in that said first video generation means and said second video generation means generate videos of the virtual object using the information that pertains to rendering of the virtual object.

Claim 4 recites all the limitations of claim 1 and adds the limitation of "information generation means" and "generation means generate videos." Daily teaches an information generation means (e.g., figure 1, 9-10; column 3-5; column 10-12).

Claim 6:

The apparatus according to claim 1, characterized in that parameters of said first video sensing means are known, and said first video generation means generates the video of the virtual object viewed from said first viewpoint position in accordance with the known parameters.

Art Unit: 2672

Claim 6 recites all the limitations of claim 1 and adds the limitation of “the known parameters.” Daily teaches the known parameters such as the focal length of the CCD video camera and measured plane’s coordinates by GPS sensors, and input parameters such as the desired resolution, the object’s focal length, orientation and Cartesian coordinates on the object’s image plane where the object is either the image source or the user display (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 7:

The apparatus according to claim 1, characterized in that some of parameters of said first video sensing means are variable, said apparatus further comprises measurement means for measuring changes of the parameters, and said first video generation means generates the video of the virtual object viewed from said first viewpoint position in accordance with the parameters measured by said measurement means.

Claim 7 recites all the limitations of claim 1 and adds the limitation of “variable parameters” and “measurement means.” Daily teaches measuring the plane’s positions are variables of the plane’s coordinates in which the coordinate values are measured by the GPS sensors (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 8:

The apparatus according to claim 7, characterized in that the parameters of said first video sensing means measured by said measurement means include at least one of a viewpoint position/posture, and zoom ratio.

Art Unit: 2672

Claim 8 recites all the limitations of claim 7 and adds the limitation of “position/posture information.” Daily teaches the plane’s positions are variables of the plane’s coordinates which determine the position/posture of the CCD video cameras and the zoom ratios are determined by the zooming in and out parameters inputted by the user. Daily also teaches generating and correcting view position and posture of the passengers (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 9:

The apparatus according to claim 1, characterized in that when a plurality of first video sensing means equivalent to said first video sensing means are present, said apparatus further comprises selection means for receiving a plurality of videos of the real space from said first viewpoint position from the plurality of first video sensing means, and outputting a video of the real space viewed from said first viewpoint position from one selected first video sensing means to said first video composition means, and said first video composition means generates a video of the virtual object viewed from said first viewpoint position using parameters of the first video sensing means selected by said selection means.

Claim 9 recites all the limitations of claim 1 and adds the limitation of “selection means for receiving a plurality of first video sensing means.”

Daily teaches selecting of the image regions as captured by a plurality of video cameras by zooming in and out the video scene in the real space. Daily also teaches a plurality of video cameras for sensing a scene below or around the plane where image signals that represent an

Art Unit: 2672

environment scene of a real space and the user's zooming in and out video scene (*figure 1, 9-10; column 3-5; column 7-12*).

3. Claim 10:

The claim 10 is a rephrasing of the claim 1 in a method form. The claim is rejected for the same reason as set forth in claim 1.

Claim 12:

The apparatus according to claim 10, characterized in that said player's viewpoint augmented reality presentation step further comprises: the second video generation step of generating a video of the virtual object viewed from said player's viewpoint position; and the display step of displaying to the player the video of the virtual object viewed from said player's viewpoint position on a display surface through which the player can visually see the real space.

Claim 12 recites all the limitations of claim 10 and adds the limitation of "the second video generation step" and "the display step."

Daily teaches the second video generation step and the display step including the video generation in accordance to the user's zooming in and out parameters and the HMD for viewing the video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 13:

The method according to claim 10, characterized by further comprising information generation step of generating information that pertains to rendering of the virtual object, and in that said first video generation step and said second video generation step generate videos of the virtual object using the information that pertains to rendering of the virtual object.

Claim 13 recites all the limitations of claim 10 and adds the limitation of “information generation step” and “first and second generation steps to generate videos.”

Daily teaches the information generation step and the first and second generation steps to generate videos (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 14:

The apparatus according to claim 13, characterized in that said information generation step includes the step of generating information of an outer appearance of the virtual object and information of a position/posture of the virtual object as the information that pertains to rendering of the virtual object.

Claim 14 recites all the limitations of claim 13 and adds the limitation of “generating information of an outer appearance of the virtual object and information of a position/posture of the virtual object.”

Daily teaches capturing the plane’s coordinates, generating and correcting view position and posture of the passengers, zooming in and out the video signal, and selecting the local FOV thereby correcting the viewpoint position/posture of the virtual object (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 15:

The method according to claim 10, characterized in that parameters of said first video sensing means are known, and said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the known parameters.

Claim 15 recites all the limitations of claim 10 and adds the limitation of “the known parameters.” Daily teaches the known parameters such as the focal length of the CCD video camera and measured plane’s coordinates by GPS sensors, and the video scenes can be adjusted in accordance to the desired resolution, the object’s focal length, orientation and Cartesian coordinates on the object’s image plane where the object is either the image source or the user display (figure 1, 9-10; column 3-5; column 7-12).

Claim 16:

The method according to claim 10, characterized in that some of parameters of means for sensing a video viewed from said first viewpoint position are variable, said method further comprises the measurement step of measuring changes of the parameters, and said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the parameters measured in the measurement step.

Claim 16 recites all the limitations of claim 10 and adds the limitation of “variable parameters” and “measurement step.” Daily teaches measuring the plane’s coordinates which are variables as plane moves. Daily further teaches correcting view position and posture of the passengers and zooming in and out the video scene (figure 1, 9-10; column 3-5; column 7-12).

Art Unit: 2672

Claim 17:

The method according to claim 16, characterized in that the parameters of the means for sensing a video viewed from said first viewpoint position measured in the measurement step include at least one of a viewpoint position/posture, and zoom ratio.

Claim 17 recites all the limitations of claim 16 and adds the limitation of “position/posture information.” Daily teaches the plane’s positions are variables of the plane’s coordinates which determine the position/posture of the CCD video cameras and the zoom ratios are determined by the zooming in and out parameters inputted by the user. Daily also teaches generating and correcting view position and posture of the passengers (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 18:

The method according to claim 10, characterized in that when a plurality of means for sensing a video viewed from said first viewpoint position are present, said method further comprises the selection step of receiving a plurality of videos of the real space viewed from a first viewpoint position from the plurality of means for sensing a video viewed from said first viewpoint position, and outputting the video of the real space viewed from a first viewpoint position input from one selected means for sensing a video of said first viewpoint position to means for compositing a first viewpoint video, and said first video composition step includes the step of generating a video of the virtual object viewed from said first viewpoint position using parameters of the means for sensing a video viewed from a first viewpoint position selected in the selection step.

Claim 18 recites all the limitations of claim 10 and adds the limitation of “selection step for receiving a plurality of videos.”

Daily teaches selecting of the image regions as captured by a plurality of video cameras by zooming in and out the video scene in the real space. Daily also teaches a plurality of video cameras for sensing a scene below or around the plane where image signals that represent an environment scene of a real space and the user's zooming in and out video scene (*figure 1, 9-10; column 3-5; column 7-12*).

4. Claims 28-29:

Referring to claims 28-29, Daily discloses a mixed reality presentation system that generates and presents a virtual image in a real space (*figure 1, 9-10; column 3-5; column 10-12*). However, the reference is silent on a printing means in connection to the mixed reality presentation apparatus. It is common that a computer system has a printing means attached to them. Therefore, it would have been obvious to one having ordinary skill in the art to have incorporated a printing means in the mixed reality presentation apparatus of Daily because such construction is rather conventional. A person of ordinary skill in the art would be motivated to have incorporated a printing means to the Daily's mixed reality presentation apparatus to further provide a paper copy of still images of the real images that have been displayed on the display devices of Daily.

5. Claim 31:

Art Unit: 2672

The claim 31 encompasses the same scope of invention as that of claim 1. The claim is subject to the same reasons set forth in claim 1.

6. Claim 32:

The claim 32 encompasses the same scope of invention as that of claim 1. The claim is subject to the same reasons set forth in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 19 and 24-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Daily U.S. Patent No. 6,317,127 (Daily) in view of Latypov U.S. Patent No. 6,624,853 (Latypov) and Sato U.S. Patent No. 6,445,815 (hereinafter Sato).

8. Claim 19:

(1) The claim 19 encompasses the same scope of invention as that of claim 1 except additional claimed limitation of "a storage medium storing a program code.

(2) It is unclear whether Daily has implicitly taught a storage medium storing a program code.

(3) However, Sato discloses the claimed limitation of a storage medium that stores an image processing program, which is implemented on a computer and continuously presents three-dimensional images to an observer/player, storing a program code of an augmented reality, a depth estimation program code, a depth image generation program code, a position/posture information estimation program code, a warping program code and a program code of presenting to the observer three-dimensional images. The Sato reference implicitly teaches a program code including the augmented reality presentation step of generating and presenting a virtual image in a real space in which an image of merged real objects and virtual objects are displayed in LCDs 103 in an optical see-through head mounted device (column 1, lines 13-23). The Sato reference also implicitly teaches a position/posture estimation module 201 that outputs three-dimensional motions from a viewpoint position of the camera to right and left viewpoint positions of the player (column 12, lines 54-65). The Sato reference further teaches a depth image generation module 300 that uses position/posture information input from the position/posture estimation module 201 as that for CG rendering and which generates an augmented reality image using the three-dimensional CG database in accordance with the distance to an object in the real world expressed by the depth image and presents it on the LCDs 103 (column 12, lines 44-50) and a depth warping module 203 to inversely project a depth image ID acquired at a viewpoint having position/posture information into a space, and to re-project it onto the imaging plane of the virtual camera with the focal length of the virtual camera assumed at the viewpoint having an estimated position/posture value by the viewpoint position/posture module 201 (column 13, lines 32-48).

Art Unit: 2672

(4) Daily at least suggests program codes illustrated in a variety of flow charts (Figs. 5-9).

(5) One having the ordinary skill in the art would have been motivated to do this because it would have provided the installation and implementation of the image processing on other systems.

Claim 24:

The medium according to claim 19, characterized in that parameters of means for sensing said first viewpoint video are known, and the program code of said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the known parameters.

Claim 24 recites all the limitations of claim 19 and adds the limitation of “the known parameters.” Daily teaches the known parameters such as the focal length of the CCD video camera and measured plane’s coordinates by GPS sensors, and the video scenes can be adjusted in accordance to the desired resolution, the object’s focal length, orientation and Cartesian coordinates on the object’s image plane where the object is either the image source or the user display (figure 1, 9-10; column 3-5; column 7-12).

Claim 25:

The medium according to claim 19, characterized in that some of parameters of means for sensing a video viewed from said first viewpoint position are variable, the program code of said medium further comprises the measurement step of measuring changes of the parameters,

Art Unit: 2672

and the program code of said first video generation step includes the step of generating the video of the virtual object viewed from said first viewpoint position in accordance with the parameters measured in the measurement step.

Claim 25 recites all the limitations of claim 19 and adds the limitation of “variable parameters” and “measurement step.” Daily teaches measuring the plane’s coordinates which are variables as plane moves. Daily further teaches correcting view position and posture of the passengers and zooming in and out the video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 26:

The medium according to claim 25, characterized in that the parameters of the means of sensing a video viewed from said first viewpoint position measured in the measurement step include at least one of a viewpoint position/posture, and zoon ratio.

Claim 26 recites all the limitations of claim 25 and adds the limitation of “position/posture information.” Daily teaches the plane’s positions are variables of the plane’s coordinates which determine the position/posture of the CCD video cameras and the zoom ratios are determined by the zooming in and out parameters inputted by the user. Daily also teaches generating and correcting view position and posture of the passengers (*figure 1, 9-10; column 3-5; column 7-12*).

Claim 27:

The medium according to claim 19, characterized in that when a plurality of means for sensing a video viewed from said first viewpoint position are present, said medium further

Art Unit: 2672

comprises a program code of the selection step of receiving a plurality of videos of the real space viewed from a first viewpoint position from the plurality of means for sensing a video viewed from said first viewpoint position, and outputting the video of the real space viewed from a first viewpoint position input from one selected means for sensing a video of said first viewpoint position to means for compositing a first viewpoint video, and the program code of said first video composition step includes the step of generating a video of the virtual object viewed from said first viewpoint position using parameters of the means for sensing a video viewed from a first viewpoint position selected in the selection step.

Claim 27 recites all the limitations of claim 19 and adds the limitation of “selection step for receiving a plurality of videos.”

Daily teaches selecting of the image regions as captured by a plurality of video cameras by zooming in and out the video scene in the real space. Daily also teaches a plurality of video cameras for sensing a scene below or around the plane where image signals that represent an environment scene of a real space and the user's zooming in and out video scene (*figure 1, 9-10; column 3-5; column 7-12*).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 2672

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcw



MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600